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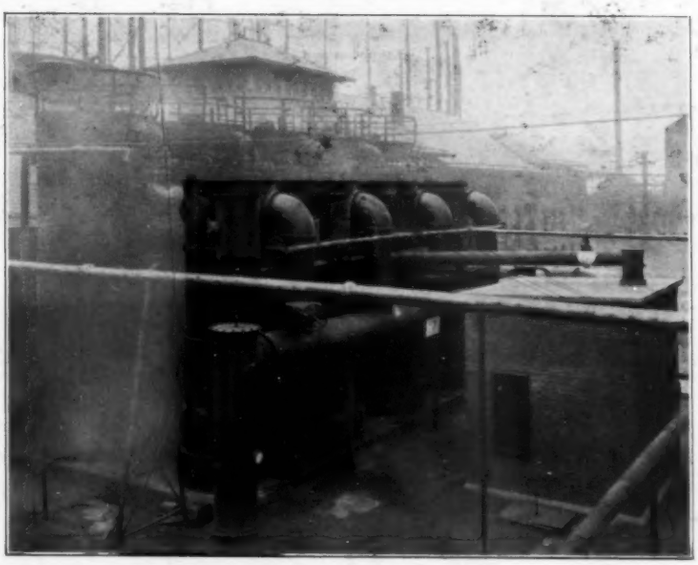

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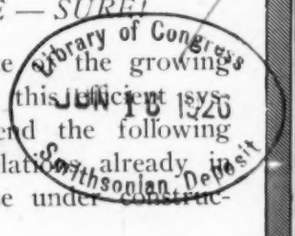

Name	Location	Kind of Gas Treated	Placed in Operation
Minn. Steel Co.	Duluth, Minn.	Producer	Nov., 1916
Denver Gas & Electric Co.	Denver, Colo.	Water	Feb., 1924
U. G. I. Sta. A	Philadelphia, Pa.	Water	Aug., 1924
Atlas Chem. Co.	Toledo, Ohio	Carbo-Generator	Jan., 1925
Pa. Atlas Chem. Co.	Washington, Pa.	Carbo-Generator	Feb., 1925
U. G. I. Sta. B	Philadelphia, Pa.	Water	Sept., 1925
St. Louis County Gas Co.	Webster Grove, Mo.	Water	Sept., 1925
Tampa Gas Co.	Tampa, Fla.	Water	Oct., 1925
Citizens Gas Co.	Indianapolis, Ind.	Coal and Water	Oct., 1925
Boston Consol. Gas Company	Boston, Mass.	Water	Dec., 1925
Union Gas & Electric Co.	Cincinnati, Ohio	Water	Jan., 1926
Lazote, Inc.	Charleston, W. Va.	Blue	Feb., 1926
North Shore Gas Co.	Waukegan, Ill.	Water	Feb., 1926
Public Service Gas & Electric Co.	Harrison, N. J.	Water	Under Construction
New Orleans Public Service	New Orleans, La.	Water	Under Construction
Public Service of Northern Illinois	Evanston, Ill.	Water	Under Construction
Wisconsin Gas & Electric Co.	Racine, Wis.	Coal and Water	Under Construction
Brooklyn Union Gas Company	Brooklyn, N. Y.	Water	Under Construction

Wherever there is a problem involving the removal of tar, oil, or other foreign matter from gas, the Cottrell Electrical Precipitation System will be found the most economical, efficient, reliable and safe. Bulletin No. 50 describes the system thoroughly.

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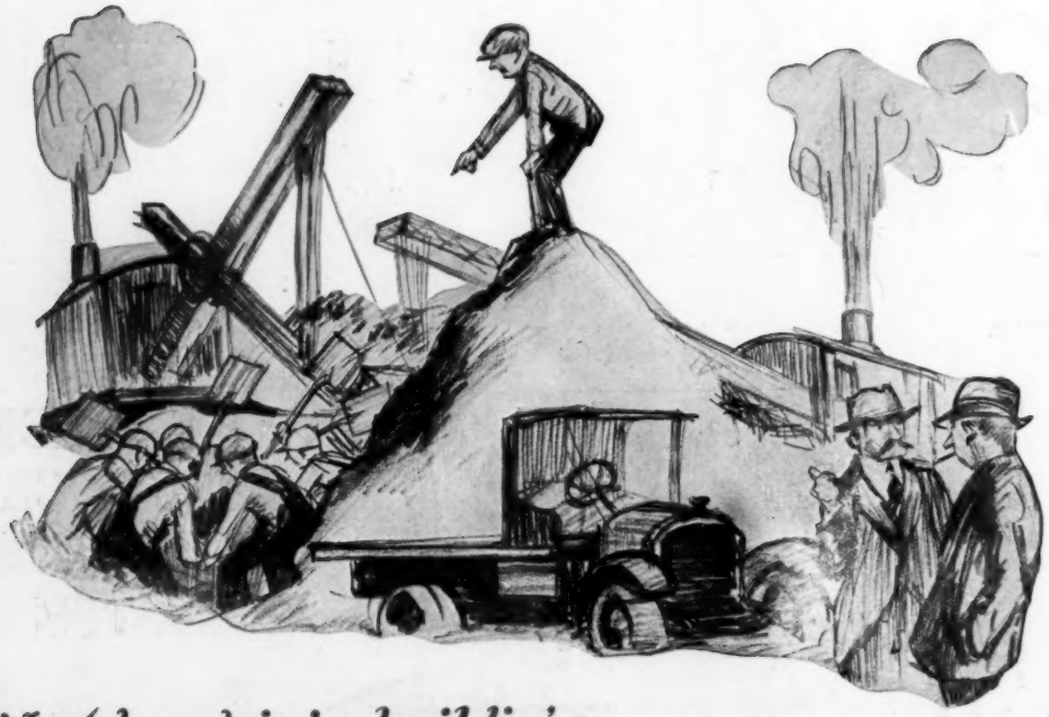
Index to Contents, Page 4 Advertising Index, Page 33



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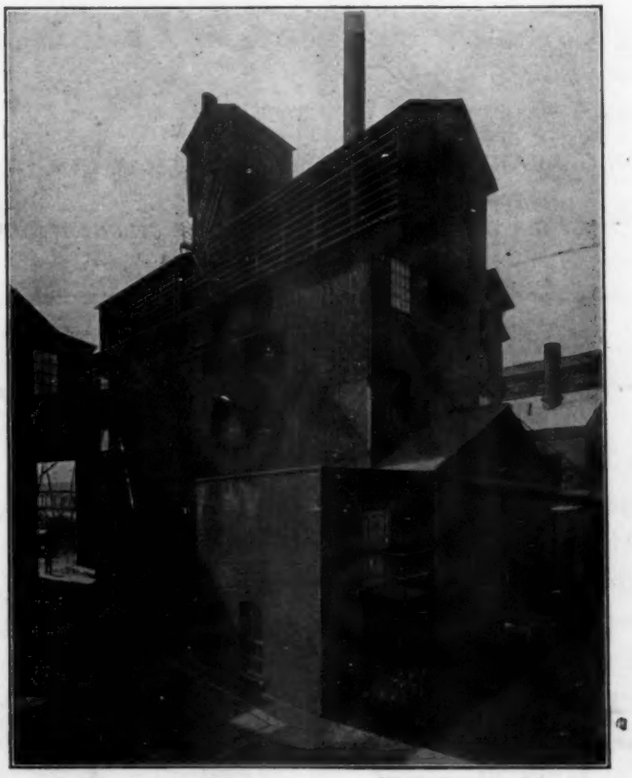

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Contents of This Issue

Recuperation in Carbonization of Steel—Porter W. Hay..... 515
The Human Element and Actual Leakage—R. V. Wilson..... 517
Gas Ranges For Summer—W. B. Stoddard..... 520
Market Lacks Direction—L. W. Alwyn-Schmidt 522
Gas-Fired Equipment in Large Buildings—Harry L. Warren.. 524
Ideas For the Man Who Sells—William H. Matlack..... 526
As the Journal Views It..... 527
Gas In the Ascendancy.
Industrial Gas Lesson No. 123..... 529
Progress In Gas Technology..... 531
News of the Gas Industry..... 532

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AMERICAN
GAS JOURNAL

Established 1859—Pioneer of the Gas Industry

No. 124. No. 24. NEW YORK, JUNE 12, 1926 Whole No. 3580

Recuperation in Carbonization of Steel

How gas is successfully used in important heat treating operation

Porter W. Hay

Industrial Gas Department, Public Service Company, of Northern Illinois.

CARBONIZATION or case hardening of steel means the increasing of the percentage of carbon on the surface of the metal, so that by reheating to redness and quenching in oil or water the surface becomes very hard, while the interior remains soft and tough.

Parts which are to withstand excessive wear are given this treatment. These parts are packed in either cast-iron boxes or steel tubes with the necessary materials for supplying the additional carbon. Such materials are nitrogenous animal matter, bone, horn, hoof clippings, leather, charcoal, etc. After the boxes or tubes are packed with the parts to be case hardened and the carbonizing material, they are sealed with fire clay and heated in oven furnaces to various temperatures, depending upon the original carbon content of the steel and the characteristics desired of the case being applied. After the furnace and materials are heated to the required temperature, the heat is held constant for a period of time varying with the depth of case desired. It is generally considered that the carbon will penetrate into the steel at the rate of 1/64 of an inch per hour. Afterwards the boxes or tubes are allowed to cool before their contents are removed, after which the parts being hardened are reheated to a temperature ranging from 1400° F. to 1700° F. and quenched in either water or oil. This reheating and quenching hardens the carbon which was added during the carbonizing period in the oven furnace.

A Process In Which Gas Is Used

The Buda Company of Harvey, Ill., carbonizes cam shafts, push rods, and piston pins for automobile engines, and jack pawls principally, but occasionally other parts are also case hardened. All these parts are packed in cast iron boxes sixteen inches long, nine inches wide and ten inches deep, with the exception of the cam shafts, which are packed in four-inch steel tubes, part of which are thirty inches long and part forty-eight inches long, depending on the size of the shaft to be heat treated. The carbonizing material used is a mixture composed of sixty parts old and forty parts new case hardening compound, manufactured by the Montgomery Chemical Company. During the carbonizing period, which lasts from eight to ten hours, a temperature of 1720° F. is maintained.

The gas-fired carbonizing furnace shown in the illustration constitutes part of the equipment in the heat-treating department at the Buda Company. This furnace, originally built by the Strong, Carlisle & Hammond Company of Cleveland, Ohio, was equipped with oil burners, but in April, 1924, the Combustion Utilities Corporation of Toledo, Ohio, rebuilt the furnace under discussion and changed the burner equipment to utilize low pressure gas as the fuel. The photograph shows one-half the burners, and also shows the gas service crossing the top of the furnace which supplies the burners on the other side with fuel.

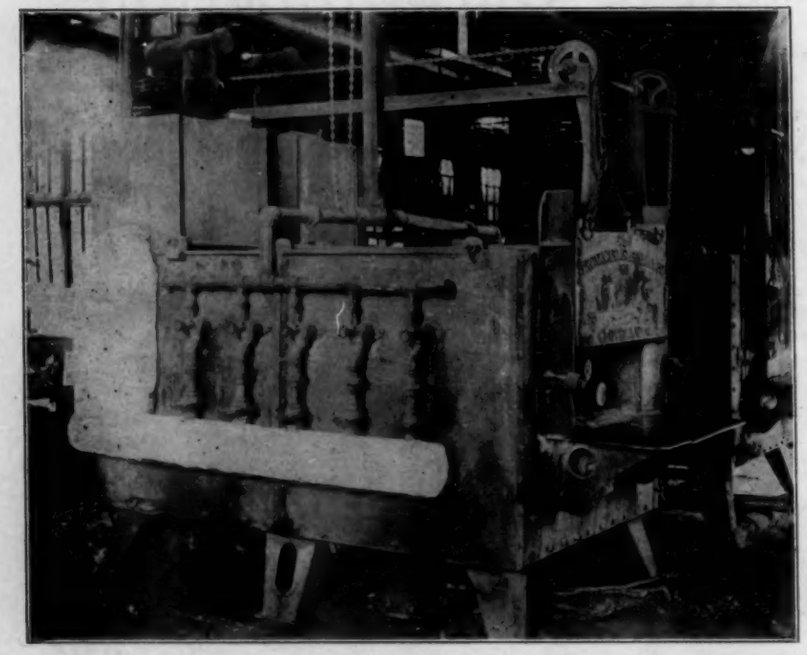
Two Methods of Heat Distribution

Two methods are employed to attain a uniform heat distribution throughout the working chamber of the furnace. First, the burners on one side are staggered with reference to those on the other side instead of being directly opposite, and second, the flames are directed with a slight angle upwards towards the arched roof of the burned gases on their passage from the hot zone of the furnace to the atmosphere.

The gases, after they are burned, pass down along the walls into ducts which begin five inches above the floor and convey the gases under the hearth and towards the central flues, which extend the full length of the furnace and terminate directly beneath two stacks. Built within these stacks are two sets of recuperators the purpose of which is to reclaim part of the entrained heat of the flue gases before they pass out of the stack and into the room. This heat is absorbed by air passing through the recuperators, which is afterwards used by the burners.

The Recuperators

The recuperators in each stack comprise eight sections arranged in two tiers of four sections each. These special alloy steel sections are designed so as to expose a maximum amount of heating surface to the passage of the hot gases. The direction of flow of air and gas are opposite, thereby permitting the hottest gases to be in contact with the portion of the recuperators containing the hottest air. This principle tends to give a better and more balanced heat interchange from the burned gases to the air which is to be delivered at the burner.



The Carbonizing Furnace, Showing Insulated Hot Air Inlet Pipe

The air entering the recuperator is supplied at a pressure of from eighteen to twenty ounces by a large rotary blower. A five-inch pipe connects the recuperator header with the air line overhead. This header is four inches in diameter from which is teed four three-inch connections, one to each of the four tiers of sections. The lower ends of the recuperators are connected by means of three-inch pipe to a four-inch header on each side of the furnace. This delivers the hot air from the recuperators to the five burners through one and one-half inch openings and to prevent the loss of heat from radiation this header is covered with asbestos over its full length, as can be seen from the photograph.

The Gas Inlet

The gas is brought to the furnace by a three-inch service which divides near the top into two two-inch leads, one to each manifold, of one and one-half inch pipe with three-eighths inch openings to each of the burners. The gas pressure at the burners is maintained at five inches of water.

Cast iron burners are mounted on the sides of the furnace; within these burners are concentric tubes for the passage of air and gas. The arrangement provides for a thorough mixture entering the furnace.

The gas and air flow is regulated by the two valves shown in each burner set up, the gas being controlled directly at the burner and the air by the slide valve just beneath. This arrangement permits changes in either gas or air flow to be made very readily and after the operator becomes familiar with the manipulation of these valves, very close regulation of the temperature within may be obtained.

Results of Tests

After the furnace had been rebuilt, tests extending over a period of several months were made, and the average results were as follows:

Average gas consumption per hour.....1270 cu. ft.
Average length of heat .....13.2 hours
Average net weight per heat..... 433 pounds
Average gross weight per heat....1800 pounds

The average length of heat given above allows an average time of eight hours for the carbonizing period and five and two-tenths hours for the furnace and contents to attain the desired temperature of 1720° F. The latter period is called the "bringing up" period. Also, during the tests it was found that this furnace was completing a heat in about two hours' less time than an oil furnace of the same type and size and was giving a more uniform case to the parts being hardened. This was the result of preheating the burner air and uniformly distributing the heat within the furnace.

Tests With Recuperator

Recently tests were made to ascertain the results obtained with the recuperator. The temperature outside of the building was 92° F., and inside the heat

treat room, considerably higher. The air delivered to the recuperators from the blowers had a temperature of 105° F., after leaving the recuperator its temperature was 375° F., showing that the air had been heated 270° while passing through the recuperator. It is generally conceded that to properly support combustion a theoretical mixture of five parts air and one part gas is necessary to give the maximum burner efficiency, and when the theoretically correct proportions of gas and air are used, recuperation with low pressure gas saves approximately fifteen per cent. of the total gas burned by the furnace.

Another point may be mentioned in reference to this furnace. It was rebuilt and put into service April 1, 1924; since that time it has averaged between fifty and sixty hours of service per week, and the original brick work is still within the steel walls. In other words, up to the present time, after fifteen months of service, this furnace has had no maintenance expense.

Gas has been increasing in its use in the industrial fields with giant strides during the past few years, and now that this great fuel industry has adopted the principle of recuperation to both high and low pressure gas installation, still greater accomplishments should be achieved, making this a truly "super-fuel."

The Human Element and Actual Leakage*

How carelessness leads to great losses

R. V. Wilson
Pacific Gas and Electric Company

UNACCOUNTED-FOR gas is an evil as old as the gas industry itself. There has always been, as with most other evils of waste, hope that some mechanical means would some day be found that, when applied, would cause unaccounted-for gas to disappear like magic.

Over one hundred years of such wishing and hoping passed before a great deal of interest was made manifest in the real factors contributing to this great volume of gas lost. But today, due to this interest, we are finding that this great magic which we have been wishing and hoping for is within our grasp. Not in any mechanical form but in another, and that is proper education of the men making up the personnel of our industry.

The history of our experience differs little from those of other great problems of waste. The great menace of fire, automobile accident, industrial accidents that started our safety first campaigns, all began with experiments of mechanical prevention, but today we find energies applied along other lines and that is, teaching the individual.

Human Element Most Potent

We still place safety guards around our machines but this alone will not prevent accidents. We must take into account the greatest factor of all—the human element.

We can hardly pick up a newspaper or magazine today without reading some word of caution regarding the danger of fire or accidents. We read from statistical reports quotations of tremendous loss of property due to these hazards.

Let's look for a moment at our own. The total unaccounted-for gas for only four companies on the Pacific Coast for 1925 was over seven billion of cubic feet. Now it's difficult to picture such a volume unless we have something with which to compare it, so we will use time.

There are approximately one billion minutes since the birth of Christ. Only four companies on the Pacific Coast had a loss in 1925 equivalent to over seven cubic feet for every minute since the birth of Christ. It cost these four companies over $1,500,000 to produce this unaccounted-for gas. Think of what the figure for the entire Pacific Coast must be.

Is this loss worthy of any efforts towards prevention? Can we afford to launch a campaign against it? Will such a campaign pay dividends?

Before we attempt to answer these questions let us familiarize ourselves with the conditions as we have found them.

Some Startling Facts

A carefully planned and worked out survey covering over 60,000 premises spread over many towns and in systems operating under various conditions has disclosed some startling facts. These particular surveys cover only that portion of our systems above ground. Comparing the results found with those of other companies carrying on a similar work we find the same general conditions existing, and while these surveys cover but a small part of total services in our systems we believe these same conditions prevail throughout the Pacific Coast.

Of the 60,000 devices tested, 20 per cent. were

* Paper read before meeting of Pacific Coast Gas Association, May 7, 1926.

found leaking. Twenty out of every hundred! Two hundred out of every thousand! Why did they leak? In some instances because of poor material, in others because of poor workmanship, but regardless of whether it was material or workmanship they were found leaking because someone failed to test his work, because someone did not inspect the job after it was finished. The human element played the final part and failed. Had these men been properly instructed in their work, had there been an adequate follow-up system, either these leaks would not have occurred, or would have been stopped immediately.

Careless Conclusions

From the conditions of some of the installations it is obvious that a number of the men are still of the same opinion as one individual who, after answering a leak complaint several times without finding the cause, finally told the consumer that in all meter installations there was bound to be an odor of gas. Now this was bad, but the discouraging thing came in an interview with the man himself and we found that he really believed in what he had said. The leakage survey crew found that the meter had been set on a board with a shingle nail in it and the weight of the meter had punctured the bottom. The man who made the installation was careless. The man who answered the complaint knew there was a leak but lacked thoroughness which would result from proper training and a real knowledge of his work.

Segregating the leaks in these services we found the stop cock to be one of the greatest offenders. Many contributing factors are responsible for this, among them the commodity itself. Many stop cocks on the market are too light and will not stand the abuse they receive from lock and unlock men.

Observation proved two other factors; many fitters, in making up their work, apply the wrench to the end farthest from the joint being made up. This throws a strain on the body of the cock and because of the little resilience of the metal it is very apt to cause a leak at the core. In some districts lock and unlock men are under the commercial department, generally men who have had little or no practical experience and do not know what a soap can looks like. They go out to lock or unlock a meter; they unscrew the nut at the bottom of the core, give the cock a turn and then forget to tighten the core down again or perhaps they are saving themselves the trouble of having to loosen it when at some future date they will come to turn off or on again.

All these things result in loss and some of them include danger to human life.

Another Example

One place was found where a service coming off a line carrying forty pounds pressure crossed a small ravine and was exposed. In this exposed portion there was a cock. This lock leaked and one evening while returning from work one of the leakage survey crew found small boys lighting this gas to see it burn.

You don't have to stretch your imagination very far to picture what might have happened, of how it might have been the duty of the superintendent of that territory to go to the home of one of those little boys and tell the mother that her son would not be home any more. Think of the anguish and suffering because of the carelessness of someone—carelessness because of lack of proper instructions and a follow-up system.

A great deal has been said in the past few years about defective fittings and undoubtedly they have contributed largely to leakage, but let us not forget that the human element is also responsible for these leaks, for they should have been found before the job was completed. It is assumed that one fitter became so disgusted with defective fittings that he began experimenting with substitutes, for in one locality three corks were found in tees instead of plugs.

Leakage in Regulators

This survey revealed that eleven per cent. of the regulators were leaking, some of them being under houses or in closed quarters and not vented, creating a hazard to both life and property.

Most of the leaks were on account of diaphragms and probably developed through age. But they do develop, and if set in closed places should be vented. However, it is hardly necessary to go to the extent that one district did. In this territory vents were found running from the basement, up the side of the house to the eaves of the roof.

Other leaks were from cracked castings, some of them were from regulators set in driveways, at the edge of walks or in places where they would be exposed to unusual abuse. Observation again disclosed that regulator castings are often broken through handling. Have you ever watched a man in a shop very carefully adjust and test a regulator, pick it up and place it on a shelf with care almost equal to that he would use in handling a watch? Then notice the man who is going to set the regulator. He takes it off the rack, throws it on his wagon, where it will bounce around with picks, shovels, fittings, dirt and many other articles less useful so often found on meter wagons. He seems to think that because its case is made of cast iron that it can be handled as so much pig or scrap iron.

This man needs instruction in the mechanism of this very delicate instrument, and needs to be impressed with the results that may happen if that regulator fails to function.

The Meter

Of all the units that go to make up a service the meter is the one that has received the greatest amount of attention. It receives numerous inspections before it leaves the factory and is again checked by the company before being installed. The work done in improving meter shop practice in the past few years has shown remarkable results. These

results have all been attained through a conscientious drilling and educating of our men in correct shop practice.

We make this instrument accurate to a very fine degree and then set twenty per cent. of them so they leak. They leak through inlet and outlet connections, broken spuds and from bulged seams.

Many installations were found where strain of the piping to and from the meter had broken the spuds from the body.

In another large territory eight per cent. of the regulators were delivering gas to the meter at pressure higher than eight inches water column and many of these delivering pressure in pounds. Still another territory devised this wonderful scheme: In a low pressure system it was desired to take service off a main delivering gas at thirteen inches pressure. In order to comply with the Railroad Commission requirements, regulators were installed, but they were located on the outlet side of the meter. As far as pressure at the consumer's appliance was concerned the desired results were obtained but accounted-for gas suffered to the extent of over three per cent. of all the gas passing meter thus equipped.

Dials so discolored that it was difficult to read the meter were numerous. In talking to a meter reader about it he said "I often wondered why they got that color."

Many installations are seen only by the meter reader for years and we should be able to depend on him to report irregularities, yet we have found meters that have been read every month lying flat and had been for over a year.

Leaving It Up to the Customer

There was an old belief that if a leak was of any consequence the consumer would make a complaint. This is not true, for leaks were found of such volume that they discolored the paint on the houses, yet the files failed to show a complaint from these parties.

Now I know some of you men are thinking that these conditions do not exist in your system, but be careful, for if you have unaccounted-for gas and have not had a premises survey, that is a very careless thought. Other men have thought the same thing until the survey was made.

Where there is a lack of some follow-up system it has been found that the best of men fail in their work. One employee with years of service as a fitter and considered a very efficient man set a meter tilted at forty-five degrees. Another old employee, after being cautioned several times about leaks, made an installation on the manager's premises and left a leak. He admitted that he did not test his work after he had finished, but had his helper do it for him.

A detailed account of the many extraordinary conditions found on consumers' premises during the course of the survey would fill volumes, but among them can be recounted the following:

Bad Practices Revealed

Improper use of patent meter connections, oil seals that should have been removed years ago but are still in service and many of them blowing. Meters, set in holes dug in order that meters could be placed under houses, these holes filling with water during rainy seasons.

Twenty-one sub-meters all fed through a No. 1-A Sprague meter as master meter.

Meter sets hooked up to hose connections on the outlet side of meter. The use of soap for testing that softens and disintegrates the paint. The use of meter washers so imperfect in shape and thickness that a tight joint was impossible. All of these show the lack of follow-up systems and proper education.

Mechanical preventatives will help, but our greatest effort should be towards a better training of our men, for many of these leaks are actually created by the men at the time of installation, and in order that a realization of the importance of thorough and thoughtful inspection be created and maintained, it is necessary to adopt a whole-heated system of education extending from the men higher up to right down the line to every man who has to do with the manufacture of our product or conveyance of our service to the consumer. Every one in the industry should be so drilled that the thought of careful checking for safety and efficiency will be constantly in mind.

That thought should come automatically and without effort. Such a result can be accomplished only by a strenuous and continuous campaign of education.

The human element plays the final part and our success in stopping leakage depends upon how well the individuals are kept keyed up to the full responsibility of their duty.

¤ ¤ ¤ ¤

HOW MUCH GAS TO BAKE ONE PIE?

The approximate number of cubic feet of gas required for various domestic operations has recently been determined by careful study as follows:

Custard Pie—Ten cubic feet of gas will bake one or more pies, depending upon the size of the oven.

Bread—Twenty-five cubic feet of gas will bake from one to twenty-five ordinary loaves, again depending upon size and type of oven.

Chicken—Thirty-five cubic feet of gas will roast one three-pound chicken.

Bean Soup—Six cubic feet of gas will cook one quart.

Coffee—One and one-third cubic feet will prepare one quart.

Hot Water—Twenty cubic feet of gas will heat twenty gallons of water to the boiling point. This is enough for an average family wash.

It is estimated that the average family of five persons uses less than one hundred cubic feet of gas a day for all cooking and water heating.

Gas Ranges for Summer

Window displays and advertisements make for sales

W. B. Stoddard

GAS is, of course, the cooking fuel par excellence the year around, and now that furnaces are installed in all modern houses, the need for a wood or coal range to heat the kitchen in winter is nil. But it is summer, when the housewife perspires over a hot stove, that she is most amenable to the purchase of a gas range. Once it is installed, she will see its value as an all the year round proposition, but summer is the best time to get her interested.

Could anything make a housewife more desirous of possessing a gas stove than the "dream" display arranged by the M. L. Park Company, Davenport, Iowa? Surely no woman would want to "come out of the kitchen" if she could have such a fascinating one as that arranged by their astute display manager. The room was floored with black and white linoleum. The walls were ivory tone and a large double window in the rear, hung with curtain of white, looked out upon a colorful landscape. In front of the window was a table with a white enamel top, at which, on a white stool, sat a woman in blue house dress and white apron, stirring a cake. At one side was a modern gas range on which was an aluminum teakettle. A card stated that the range sold for $98.00—$10.00 down and $2.00 a week, if desired. Cards, prominently displayed, suggested "Make Your Kitchen an Efficient and Modern Workroom—Keep It Cool and Clean With a Gas Range," and "Our Home Budget Plan Enables You to Purchase This Great Convenience on Easy Payments."

A Community Peach Week

Is there a peach, apple, orange or other fruit week in your community? If so, it offers you an excellent chance to push your gas stoves. A community peach week held in Trenton, N. J., is an excellent case in point. All the leading stores had displays of peaches, and all firms handling gas ranges featured the preserving of peaches with gas. The Hoenig-Swern Company showed down front in their large window an array of fresh peach preserves which had been put up by a demonstrator working at a gas range in their window. Recipes of the preserved peaches, peach pickles, peach cobbler and other peach delicacies prepared by her were distributed by the firm. S. P. Dunham & Co. showed a complete assortment of kitchen utensils, from the gas range down to the kettle. In the foreground were shown baskets of peaches, together with a sign:

PEACH WEEK

Helps for the Betterment of Canning and Preserving

YOU CAN DO IT BETTER WITH GAS

Tell us your needs today. See how soon they can be filled and at how moderate a cost.

Canning Foods With Gas

Even where there is no special fruit week there is always the general crops of fruits, berries and vegetables to be canned, and the dealer who features the stove and utensil for canning in an attractive manner is sure to interest the housewife. Such a display was that of the Rike-Kumler Company, Dayton, Ohio. It showed a modern kitchen, floored with black and white check linoleum, with an open kitchen cabinet, gas range, table, stool and cartons of glass jars. Beside the table stood a model in the act of straining syrup for preserves. This model was used to make up the still life display in the evening. During the afternoon hours a live demonstrator was in the window, going through all the processes of canning, displaying from time to time cards showing the advantages of canning by means of a gas range, the even regulation of the heat being one of the points most impressively stressed.

How to Make Breads that Delight the Appetite
Bread making dates back beyond the beginning of recorded civilizations. But from day to day modern research reveals new and enticing breads. We bring these to you knowing that one of the hardest things about housekeeping is finding "something different."
Brides and prospective brides especially invited.
Our demonstrators will prepare and bake at 2 p. m. today:
Baking Powder Raisin Bread
Lemon Muffins
Ice Box Rolls
These free cooking classes, every weekday but Saturday at 2 p. m., are held for YOU. We cordially invite you to attend. The room is cool.
Watch for announcement of our candy-making contest for girls, beginning June 22.
Listen for our Home Service talks broadcast from Radio Station KSD every weekday at 10 a. m.
Home Service Department
The LACLEDE GAS LIGHT COMPANY
OLIVE AT ELEVENTH
CENTRAL 3800

A Special Appeal to the Bride

The Powers Company, Portland, Ore., used no figures, but their window resembled a theatrical stage, with its compo board decorations. In the rear was a cut-out design featuring trees in brown

and green, and a railing hung with dark green foliage and vivid scarlet blossoms. Several birds in brass cages added to the beauty of the scene. The floor was covered with a large grass mat and set about the window were three types of a modern gas range. One card gave the price and another suggested "Use Your Credit."

Window Displays and Newspaper Ads

Good window displays should always be complemented with newspaper ads that have human interest. For instance, what could be more attractive to the young couple contemplating matrimony—and June is the wedding month—than the advertisement of the Southwestern Gas Company. It showed at the top a huge heart pierced by a dart, together with the silhouettes of man, maid and cat, standing before a gas range, the advertisement being captioned:

"THE 'WAY TO A MAN'S HEART' IS EVER THE SAME!

"Customs in courtship come and go, but human nature doesn't change. A man likes good things to eat. He admires the girl with ability to cook. A dainty little kitchen apron with a bow behind is just as attractive as any evening gown to many men.

"Girls! Learn to cook on a New Cabinet Gas Range.

"You've no idea how the modern range simplifies cooking—the oven heat control, especially. It insures a fine grained, fluffy cake; a delicately browned deep apple pie—every time you bake.

"Mothers who want to interest their daughters in learning to cook will find a shining new enamel gas range a real inspiration to the pupil. Come to Gas Range Headquarters."

The balance of the ad told how this stove could be secured upon divided payments extending over a period of eighteen months.

Another Effective Advertisement

The Laclede Gas Light Company, St. Louis, Mo., has a highly efficient home service, with cooking demonstrations at headquarters every day in the week except Saturday. In the springtime they made special appeals to the summer bride. One of their ads was adorned with the cut of a bride, with her bouquet and veil, and the caption, "Brides and Prospective Brides Especially Invited." Breadmaking is coming to be almost a lost art, so they brought delight to the heart of man when they ran the following ad:

"HOW TO MAKE BREADS THAT DELIGHT THE APPETITE.

"Bread making dates back beyond the beginning of recorded civilization. But from day to day modern research reveals new and enticing breads. We bring these to you knowing that one of the hardest things about housekeeping is finding 'something different.'

"Our demonstrators will prepare and bake at 2:00 P. M. today.

"Baking Powder Raisin Bread. Lemon Muffins. Ice Box Rolls."

"We cordially invite you to attend. The room is cool."

You can well imagine that every man showed that advertisement to his wife or sister or daughter and urged her to attend. And if she did, you may be sure she came home with some valuable information, not only on the art of bread making but also on the kind of stove she ought to have to accomplish it.

Enlisting the Young Idea

The young people of the high schools and colleges of a city can render valuable assistance in spreading

The "Way to a Man's Heart" Is Ever The Same!
CUSTOMS in courtship come and go but human nature doesn't change. A man likes good things to eat. He admires the girl with ability to cook. A dainty little kitchen apron with a bow behind is just as attractive as any evening gown to many men!
Girls! Learn to Cook on a New
Cabinet Gas Range
NO MONEY DOWN
SPECIAL OFFER TO NON-USERS OF GAS
SOUTHWESTERN
GAS & ELECTRIC COMPANY

A Gas Range Eases "The Way to a Man's Heart"

the gospel of "cook with gas." These young moderns are themselves thoroughly "sold" on the value of gas and by their enthusiasm can sell the idea to others. An excellent example of this is the gas range campaign conducted by the Star Company.

Albuquerque, N. M., in which young people from the State university domestic science classes acted as assistants. He secured six young men who wanted to earn some extra money, and put them in his store after school hours for a month in order to give them some practical knowledge of the stoves. He then sent them out to make a canvass of the city, compile statistics on the number and condition of stoves in local kitchens, and followed it up with an advertising campaign showing the advantages of the new model gas range they wished to push. The campaign brought many shoppers to the store, where young women from the domestic science department of the university, working in relays, displayed their culinary ability and the cooking qualities of the stove that was being advertised. The serving of modern gas-cooked food was interspersed with a series of lectures on gas stoves and cooking, with explanatory charts. Hearing the good qualities of the new stoves, having them logically explained and, best of all, tasting some of the products of this even heat cooking implanted the desire to possess one of these ranges—and all through the summer purchases were made which could be traced to the education campaign conducted by them, and the enthusiastic praises of the stoves by the young people of the university.

There are domestic science classes in practically all the high schools at present, and a group of high school boys and girls could be employed to advantage by any company desiring to increase the sale of gas appliances—not only ranges, but tank heaters, radiantfires, and even furnaces. More people will come to see what their own and their friends' children are doing than would come to see a professional demonstrator, and while the young people work, they are themselves being sold on the good qualities of the up-to-date gas range and will want one for cooking at home—all of which is good business for the gas company.

Market Lacks Direction

Retail distributors mostly affected---no change expected in immediate future

L. W. Alwyn-Schmidt

THE student of market conditions soon learns to differentiate between spectacular, but merely sectional market upheavals and the great waves of economic energy which determine the history and future development of the market. So even a prolonged series of stock exchange flurries is quickly reduced to its proper place in valuing the strength or weakness of the market, while more attention is given to such fundamentals as purchasing strength, industrial profits, and direction of popular demand. Considering this, it is easily understood why those of the commercial leaders of the nation who possess the means to appraise correctly the situation of the market remain undisturbed in the face of the many unsettling elements that have entered the economic constellation during the last two months.

Business, in the language of the man in the street, is not all that it should be. It has remained extremely freakish, favoring one section of the market and leaving another blank. Collections again seem to be slower and merchants have difficulty of obtaining satisfactory prices. For all this there is sufficient explanation. One is the continuation of the very unseasonable weather which has practically eliminated the Spring business. The other is the coal strike, which ended some time ago but which is still exerting its depressing influence upon an otherwise very prosperous section of the country. Still another is the reaction of the buying public upon such news items as the likely outcome of farm legislation and the foreign situation.

Influences of Passing Nature

These influences, however, are all of a passing nature. They will pass as quickly as they have appeared. They have no permanent effect even if they sway the mind of the consumer for a few days or even a week. They cannot stand up against the more solid considerations that the market is healthy all through, that the purchasing strength of the consumer is improving, that the industry is recovering its position both as regards earnings and financial resources, and that there is really no obstacle in the way of a general recovery.

Why is it, then, that business will not get under way? Why has prosperity, expected since the beginning of the present year, not put in its appearance? The answer is to be found in a peculiar lack of economic harmony in the make-up of the market.

Somehow and somewhere during the last few months contact has been lost between the consumer and the producer. They do not speak the same language just now. The appeal of the seller does not find a response in the mind of the buyer. The study of mass psychology as affecting distribution is still not developed sufficiently to permit a correct analysis of the causes of this situation. The commercial machinery of today provides two points of contact between producer and consumer. The older and most immediate is the retail shop, the other is the

advertisement. In the first instance the contact is made by way of the distributor to whom the producer delegates the representation of his interests. In the advertisement the producer speaks directly to the consumer.

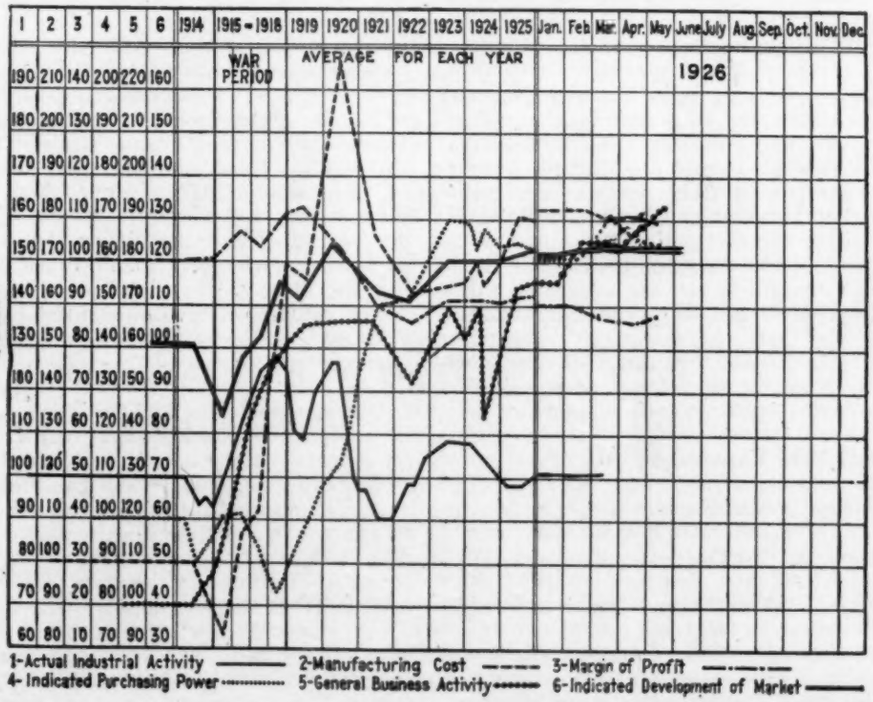
Line of Communication Broken

A breakdown has occurred along the line of communication. The consumer market has changed. It is not easy to present concrete examples of these changes and to locate distinctly the points of disruption. But a few instances are mentioned here, with a view to aid in locating others. While during the last decade a steady flow has been noticed from the country to the cities, a relocation of the population of the big cities is now taking place by the formation of suburban semi-rural settlements. The wage-earner has improved his economic position above that of the often lower-paid white-collar worker and salaried man. The average of culture and good taste is increasing. Motor bus and private automobile provide new points of contact between the rural consumer and the city.

The effect of these changes upon business technique and market psychology is very considerable. So the formation of suburban communities combined with improved road transportation facilities from the country to the city have vastly increased the distributing power of the avenue shop. The shift in purchasing power from the lesser-salaried classes to the wage earner has diverted the channels of distribution for many classes of merchandise. Changes in taste and cultural accomplishment are demanding similar changes in the selection of merchandise. Main Street must enter into competition with the Avenue.

Retail Distribution Slow to Be Adjusted

Retail distribution has been slow to adjust itself to the new conditions. Often the result has been mistaken for the cause, and wrong policies have been adopted to meet the emergency. So the shift in comparative purchasing strength of certain layers of the population has been answered by a policy of price cutting where the requirement was a change in the selection of the merchandise offered for sale. Selling has not kept step with the desires of the consumer, and advertising obviously has misunderstood the temper of the consumer.



The result is general lack of direction. Manufacturers and dealers are inclined to experiment. New lines of approach are tried. Frequent changes are made in the design and quality of merchandise. Increased effort is spent upon selling, adding in this manner to the cost of distribution and lessening the profits of the sale.

There is no real remedy for this condition but that of waiting until a solution offers itself. Somewhere the consumer will declare his mind. He will show a decisive choice, providing the market in this manner with the required tendency. This change in direction may come at any time. It is more likely to occur during the Spring season than at the beginning of the Summer season, for instance. But Spring has proved a disappointment from the business man's point of view, so the chances are that no decisive change may be expected now before the coming of Fall.

(Continued on page 528)

Gas Fired Equipment in Large Buildings*

Details of the case of gas compared with oil

Harry L. Warren

Sales Engineer, Southern California Gas Co.

THE condition of the atmosphere in dwellings and public buildings is of such importance to health and vigor of mind that heating and ventilation are receiving more and more attention as sanitary science is better understood. Since the advent of the open hearth, numerous categories of heating contrivances and heating systems have been evolved. Of these, low pressure steam occupies the apex of desirability and economy. On account of its almost universal use in the heating of structures of any consequence, we may consider the superiority of this system of heating as axiomatic.

The gas industry manufactures a product that makes possible still greater improvements and refinements of operation of this accepted system of heating. But the consumer and his professional advisers, the architect and the engineer, are not aware of their practicability and economic feasibility. In fact, when one attempts to sell the advantages of a gas-fired installation he meets a veritable mountain of resistance. He finds the prospective consumer surrounded by barriers of habit, unfavorable experience, erroneous analysis, skepticism and prejudice, as well as the ever active forces of competition.

Gas Very Expensive Fuel!

It is a popular opinion that gas is a very expensive fuel. The man from the East has usually arrived at this conclusion, due to the fact that he has tried to use gas in an old coal furnace, equipped with makeshift burners, where the gas rate was 100 per cent higher than that of local gas companies. The Californian has arrived at this erroneous conclusion because he has been exposed to a deluge of inferior appliances, incapable of even a moderate efficiency with gas fuel. The architect and the engineer sincerely believe that the cost of gas fuel is prohibitive in installations of any size because they have been so busy producing blue prints that they have failed to spend any time conscientiously investigating the merits of a new use for what they know to be a superior fuel. They shy at something new or unfamiliar, while their several unsuccessful attempts to convert appliances designed to burn coal to the use of gas have increased their timidity several fold.

Load Comparisons

In the matter of load analysis, many engineers are prone to make odious comparisons. For instance, it is not uncommon for load size and load characteristic to be taken as synonymous, while in reality they are absolutely separate and distinct identities.

On official of a large engineering and contracting firm in this city once compared the heating load of a very large Los Angeles office building to that of an electric power generating plant. The former is intermittent and operates between a load factor of 0.0 and 1.0, but very rarely ever reaches 1.0, and then for only a short time, while the latter is relatively constant and operates between a load factor of 1.0 and 2.0 or even more. Now it is not difficult to see that the most economical fuel or equipment for one is not just as desirable for the other. In fact, the building load requires a flexible fuel, while the power load requires a fuel presenting a low cost per heat unit. In the first case, a flexible automatic and simple equipment is desirable, while in the second case the load is relatively constant; the fire boxes are in an incandescent condition, which makes it possible to consume efficiently almost any kind of fuel, and the attendant machinery requires the presence of skilled mechanics capable of successfully operating the boilers. So simple, flexible and automatic boiler equipment is not essential to economical operation.

Choosing a Fuel

When choosing a fuel, it is customary to fundamentally base all calculations of their relative merits on thermal values only. Such an analysis indicates that oil fuel is cheaper than gas fuel by a margin of some 246 per cent. But this method of analysis leads to error, for it disregards the many and varied conditions in practical operation, which not only equalize any difference in the cost of the two fuels, but usually gives the gas an advantage.

One would not expect a gas-fired installation to be over 40 per cent more efficient than the most disreputable oil-fired installation under test conditions. But it is possible and practical for a gas-fired installation to be three or four times more efficient than a first-class oil-fired installation under the load conditions actually experienced. In some cases, the fuel used for stand-by alone is sufficient to heat the building. The term "crude" as applied to fuel oil fully signifies that it is not a refined product and, therefore, to take care of this condition and to effect to some extent a means of aiding combustion, the fire-box is bricked up with a highly refractory material.

High Efficiency Impossible with Oil

This material is of little value until it reaches a point of incandescence, and to effect this entails a good deal of heat being given to the material. As the boiler is seldom shut off until the occupants leave the building, the heat contained in this material is lost. It is not an uncommon thing to find the safety pop valve of oil-burning boilers operating one or two hours after the steam has been shut off. Though

efficiencies claimed for oil fuel boilers are often stated to be as high as 70 and 75 per cent, the fact remains that such efficiencies can only be obtained under the most ideal conditions of operation and a heating load is far from ideal for oil fuel and its accompanying equipment. Regardless of the heat value of fuel oil, the fact remains that the percentage of available heat, when oil is burned, depends very largely upon the skill of the operator, and the general conditions surrounding its use and application. A glance at the black smoke rolling from the several smokestacks of the large buildings in most metropolitan districts should convince anyone that the poor combustion obtained indicates a very low efficiency of the fuel oil burning equipment.

Thermal Value Important in Gas Cost

Thermal values only are unreliable indices for gas cost prediction. The engineer who reasons that a boiler is a machine to transfer the potential heat of the fuel to the contained water to convert it to steam, and that it is possible and practical to obtain the same efficiency with oil fuel as with gas fuel, irrespective of the characteristics of the load, and therefore the fuel costs for several fuels will be directly proportional to their respective cost per B.t.u., is in error.

The only advantage claimed for fuel oil is its comparative low cost per unit heat value. But the owner of an office building is not interested in purchasing dormant heat units. He wants thermal comfort at the lowest possible figure. A man investing 25 cents in apples for his own consumption wishes the largest possible measure of apple enjoyment rather than the largest possible number of apples that 25 cents will buy. When a building owner purchases fuel oil, he invests in heat units, a large percentage of which will never contribute to the desirability and comfort of his building.

California fuel oil usually has a sulphur content of from 2 to 4 per cent. This impurity pits the metal of the boiler while the concentrated high temperature flame causes undue internal stresses and strains. These factors contribute to the high maintenance experienced in oil-burning plants.

The daily cloud of black smoke caused by oil fires contributes nothing to the enhancing beauty and cleanliness of the city, and its impracticability is reflected in the high cost entailed in the washing down at close intervals of all large office buildings where oil is used on the premises or in the vicinity.

Gas Supply Constant

Gas companies furnish a constant dependable supply of gas to the consumer's premises. The nuisance of purchase and delivery of oil, as well as the necessity of storage and pumping, are eliminated, while an accurate meter in the building gives honest measure and insures against transport losses. Compare if you will this service to that obtained when burning fuel oil.

In the type of steam-heating plants endorsed by our company, the gas is burned through atmospheric burners at constant pressure with fixed gas orifices. Since regulation is obtained through the use of snap valves, the fuel is burned at the rate for which the burner has been carefully and accurately designed. After the burners and dampers are once adjusted, an exact proportion of both primary and secondary air is secured.

The attention required by gas-fired boilers is practically negligible. The time given to starting and stopping the boilers and blowing them off every heating season should not average over two hours per day. In the case of the Stowell Hotel, one attendant was eliminated and the two remaining attendants were free to devote nearly all of their time to house repairs. The Brownstein-Louis Company writes: "Another saving, which should have consideration, is with the oil-burning equipment necessary for a plant of our size we would have required the constant attendance of a licensed engineer at a salary of $2,400 a year. Our present plant requires an average of two hours a day supervision by a handy man who, in his spare time, does a very large portion of the carpenter work and makes repairs on sewing and pressing machinery necessary in other parts of the building. His salary is $135 a month." The economy effected in labor of attendance in both of these plants was equal to the annual fuel cost.

A Pertinent Tale

In a current magazine, the following story appeared:

"A certain manufacturer down East located his factory in the heart of a great forest. He did this because his product was made almost entirely of wood, of which he could secure an abundance at little or no cost. The trees were right at his door and all that was necessary was to apply the axe. economics that the manufacturer should locate as

"This practice is quite general. In fact, it is good near to his sources of raw material as possible.

"A few years later our friend, the woodenware manufacturer, discovered that his competitors were making serious inroads into his business. Their prices were quite a bit lower, although their quality was practically the same. This is an experience that all manufacturers go through at some time or another in their careers.

"Fortunately, an investigation was immediately started. It developed that the man down town was making his product out of the same wood, but he was buying it from a large lumber syndicate. The lumber he used was sawed and dried before he applied it in his plant.

Too Many Details Dangerous

"The man back in the woods had to fell his own trees, dry the lumber and attend to the thousand and one details connected with the conditioning of the lumber before it was actually ready to be fashioned into the finished product, and here is why his competitor could market the same article for less money. Even though the man who built his plant in the forest paid little or nothing for his raw material,

(Continued on page 528)

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

TAKE CARE OF THE CARETAKER

REAL estate men will welcome neatly printed signs with the words "For rent, apply to Ben. Blank, etc.," on them and a line at the bottom that says "This house is equipped with gas service" or "This house has an all-gas kitchen" or whatever it has in the way of gas appliances that make home work more efficient. These signs scattered about your town will do much to promote the use of gas. If you can work out a plan of this kind with one

big dealer, it will not be long before every dealer in town will be using such signs, and you will also find that they will advertise the fact that their listings are gas-equipped, in both their classified and display advertising. Furthermore, you must sell the caretaker on the fact that folks want only modern homes, equipped throughout with gas; then spring the card idea on him to help him out.

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DO YOU PUSH YOUR MEN?

WE know of a salesmanager, who, upon taking over a new "job," decided that he could push his men and get a nice ascending sales curve in a very short time by so doing. (We suspect he did not give a continental whoop about his men and had never taken stock even of himself). Finding that it was customary for the men to have "Sat-

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urday afternoon off," he brooded over it and figured: "Four men times four hours each equals sixteen hours! Why, that's two day's more work I can get each week out of my force and it costs nothing."

Accordingly, he held a "conference" and after painting a gloomy world to the boys, broke the sad news to them that "as much as he deplored the idea that there would be no more Saturday afternoons off." "You fellows," he said, "will have to bend every effort to pile up orders Saturday afternoon same as any other afternoon." The boys did not take kindly to the order, but apparently intended to make the best of it. Strange to say, however, business did not come on Saturday afternoons; not a man got to first base and there was a general letdown in things throughout the whole week. "Old man abili" was ever present and while this sales manager does not know it to this day, the boys went out of that conference with the feeling of "what's the use," and while there was no conversation regarding the fact, it is true they spent their Saturday afternoons and a great many other afternoons from that time on in "bending every effort" over the counter of a lunch stand. It's the same old answer of taking something away without replacing it with something. And it does not work with the human element.

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As The Journal Views It

GAS IN THE ASCENDANCY

We have often said in these columns that while it is very desirable first of all that the gas man be sold himself, on the future of gas and on the great possibilities of the industry, nevertheless, it is perhaps of even greater importance to see that the public as a whole is convinced that gas is the real and only universal fuel for all heating purposes, that the gas industry has thoroughly made up its mind on this particular point, has been progressing and using every effort to attain the goal that it has set for itself. In other words, the commendation of others is superior to self-commendation. Nevertheless, it must be emphasized again in passing, that before others can be convinced of the real value of gas, we, as gas men, must first be thoroughly sold on it in every sense of the word.

It is, therefore, with a great deal of pleasure that we print below an editorial taken from the June, 1926, issue of "Industrial Engineering Chemistry," the leading chemical paper in the country and the official organ of the American Chemical Society. This editorial was entitled "Gas in the Ascendancy." It makes very interesting reading for every gas man, particularly in that it substantiates all the claims that we ourselves have made for our industry, and cites examples showing clearly the progressive spirit that is now pervading throughout the American gas industry.

"Among the various anniversaries occuring in 1926 should be mentioned four of the gas industry. In 1796 a few citizens of Philadelphia assembled to watch an Italian maker of fireworks demonstrate the lighting qualities of the gas flame. In 1806 David Melville lighted his home and the street where his house was located in Newport, R. I., with gas. In 1816 the first gas company in the United States was founded in Baltimore. In 1876 an exhibition of cooking by gas was given at the Centennial Exposition at Philadelphia. That was the first time gas had been used for cooking and the feat was noted in the public press.

"At times the early demise of the gas industry has been predicted, but we have no better example of the use of adversity and threatened danger as a stimulant. The electric light has proved one of this industry's greatest blessings. That chemistry saved the lighting industry by the perfection of the Welsbach mantle is an oft-told story, but it is doubtful whether the industry would have expanded so rapidly to its present size but for the necessity of finding new uses for gas, following its unequal competition with electricity in the lighting field.

"The sales of gas for all purposes in 1925 established a new record of 421 billion cubic feet. This was an increase of 16 billion cubic feet over 1924 and 100 billion in the last five years. In the past ten years gas sales have more than doubled. Not only has there been a large annual increase in the number of persons served by gas, but an increase in the average individual consumption. Figures made public by the American Gas Association show that approximately 52 million people in the United States now use gas, that there are 9,800,000 gas stoves, 3,400,000 water heaters, and 4,400,000 space heaters. At present about 400,000 new customers are being added annually.

"In industry the gains are no less important. A few years ago gas engineers were proud of a list of one thousand different heating applications. This soon grew to five thousand, and now an English engineer states that gas is used in more than twenty-one thousand trade processes. Many look upon the use of gas as the real answer to fuel conservation and a vital factor in any superpower plan to utilize coal at the mines. The advent of the gas-fired refrigerator, the adoption of the temperature methods of cooking food, the desire for homes automatically heated in winter and artificially cooled in summer—all point to continued expansion for the gas industry. Chemists who believe that true conservation simply involves efficient utilization will welcome this expansion in an industry peculiarly chemical in its characteristics, for they appreciate the loss incident to the burning of coal in the raw state and the value of an air unpolluted by smoke and soot.

"The gas industry has reached its present state of affluence because it has been willing to apply science and to take advantage of any opening made

by the application of new facts. A recent example of this is the scrapping by one gas company of a $100,000 ammonia-distilling apparatus and the spending of $250,000 for a new ammonium sulfate plant. This change was made in recognition of the fact that the fixation of atmospheric nitrogen makes possible the production of a purer ammonia at a lower price than can be made by the distillation of ammonia liquor, which is a by-product in gas manufacture, thus making it advisable for this particular gas company to make a product for the fertilizer trade.

"The activities of the American Gas Association and of many companies which maintain research laboratories indicate that in this chemical industry there is still much to be done and that gas should be looked upon as an industry that is in every sense progressive."

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MARKET LACKS DIRECTION

(Continued from page 523)

Lack of Direction Not Universal

In the meantime it is well worth while to consider that this lack of direction is by no means universal. It has found its principal expression in the retail markets, and, the retail trade being the most numerous, it has affected a rather large part of the commercial community. Its effects upon the general economic situation of the nation, however, are counteracted by the very healthy activity in many branches of the national industry not connected with retail distribution. The steel industry, the building industry, and many others, are moving upon normal levels, and any activity in the key industries will sooner or later react beneficially upon the retail markets.

Even so the fact remains that the great wave of prosperity expected for the present year has not materialized, and is not likely to materialize for a while. But were we justified really to put so large a hope upon the present year? Even the most optimistic opinions had fallen far short of predicting a boom. It is certainly better for the future of the market if it undergoes a slow evolution from the depression of last year, with the secure knowledge of a prolonged period of healthy business at the end of the road towards recovery than to pass through a short-lived prosperity with all its dangers of inflation and the equal certainty of a following rapid decline.

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GAS-FIRED EQUIPMENT IN LARGE BUILDINGS

(Continued from page 525)

the cost of preparing it made the selling price prohibitive. The city factory paying a reasonable price for the wood had none of the trouble or expense of sawing or drying, as was the case with the plant in the forest."

Herein lies the moral of the story and the same line of thought should be borne in mind by all consumers. It is not what the commodity costs, but what does it cost to use that commodity?

Its Application to Fuel Oil

Fuel oil is a crude product; it must be gasified before it can be burned, and the fire-box of a heating boiler is not an efficient gas producer. The operation is too intermittent and the labor costs are much higher than in a centralized gas plant. Then, too, the building owner must incur expenses when burning oil, for such items as interest and depreciation on oil tanks, pipe lines, etc. Repairs, maintenance, labor and materials, including the cleaning of storage tanks and the diposal of refuse are expenses that must be taken into consideration.

Burner expense includes the cost of the maintenance of the burners using oil. Wherever oil is used the maintenance of fire-boxes and flues is largely due to the action of the oil on brick work and metal. Added insurance on buildings in which oil fires are used and elaborate and expensive equipment is not installed is a considerable item. Air, of course, is needed for combustion. Oil needs at least 50 per cent more air than gas and in average practice 100 per cent more air is used. Frequently oil is pumped at low pressure (20 lbs.) and steam or high-pressure air is used to atomize it. The cost of this steam or high-pressure air must be added to the oil cost.

Another charge that must in all fairness be made against the use of oil is for water, sand or gases in the oil lines causing burners to go out or require attention. Time spent by high-priced mechanics adjusting oil burners is far from being a negligible item.

Cost of Burning Fuel Significant

Therefore, in choosing a fuel, it is not what that fuel costs per heat unit, but what it costs to burn it. Although gas is more costly per heat unit, it is a refined fuel and in the end it costs less to burn gas than to burn fuel oil under the conditions dealt with in this paper.

Now it is a significant fact that the boiler design is probably more responsible for the flexibility and the economies effected with gas-fired installations than the nature and the quality of the fuel itself. But on further consideration this fact is not baffling. One would not expect to obtain satisfactory results by burning fuel oil in an automobile engine; therefore, why should they expect to obtain satisfactory results by burning gas in a boiler designed to burn coal? In fact, the former is more logical than the latter, for the coal boiler is designed for continuous operation, while the load is intermittent as well as variable.

The Special Gas Furnace

The two largest manufacturers of cast iron sectional boilers make a boiler designed for the use of gas fuel as well as a type designed for burning coal. Therefore, it is evident that the designing engineers of these two companies realize that many advan-

(Continued on page 530)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

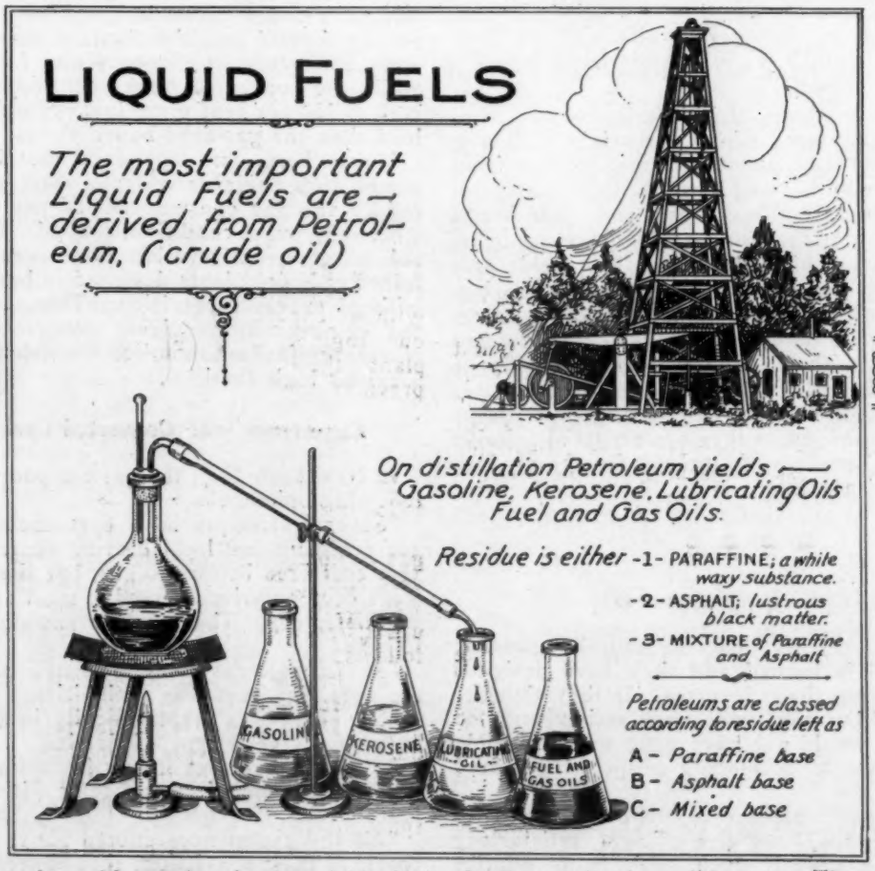
Lesson No. 123

Combustion

Liquid Fuels

The most important of all the liquid fuels is petroleum. In fact, it is one of the most important substances known at the present time. For not only does it provide the gasoline that is used as a motor fuel, and the lubricating oils that are employed in the lubrication of machinery, but it also yields fuel number of liquids known as hydrocarbons. These oils which are employed in the production of heat, steam and power and gas oil, which is used in the manufacture of gas to enrich blue water gas.

Petroleum is a substance that contains a large hydrocarbons are composed of carbon and hydrogen and there are eight different classes of hydrocarbons present in petroleum. It may be mentioned here that some hydrocarbons such as methane, ethane, and ethylene, are gases. Then come a series of hydrocarbons which are liquids, and as the number of carbon atoms in the molecule increases, the hydrocarbon liquids become heavier and more viscous and finally attain the solid state. Thus paraffin, which is a white solid, contains solid hydrocarbons.


LIQUID FUELS
The most important Liquid Fuels are — derived from Petroleum, (crude oil)
On distillation Petroleum yields — Gasoline, Kerosene, Lubricating Oils Fuel and Gas Oils.
Residue is either -1- PARAFFINE; a white waxy substance.
-2- ASPHALT; lustrous black matter.
-3- MIXTURE of Paraffine and Asphalt
Petroleums are classed according to residue left as
A - Paraffine base
B - Asphalt base
C - Mixed base
GASOLINE
KEROSENE
LUBRICATING OIL
FUEL AND GAS OILS

Types of Petroleum

There are in reality a great many different kinds of petroleum, for the composition of petroleum will

vary considerably with the locality in which it is found. But it is possible to distinguish between three main kinds of petroleum. The first type of crude petroleum is the one that yields a residue on distillation which consists mainly of paraffin. The second type of crude petroleum is the one that yields a residue of asphalt on distillation, and the third type yields a residue of both asphalt and paraffin. Thus there are three "base" petroleums—the paraffin base, the asphalt base, and the mixed base.

In addition to carbon and hydrogen, which are found in petroleum in the form of hydrocarbons, all crude oils contain both nitrogen and sulphur. The percentage of nitrogen may vary from only a trace, to one per cent. or more. It must not be supposed that nitrogen is present as such in petroleum, for it is really found in the state of complex organic combinations. For example, the petroleums that are obtained in California are particularly rich in nitrogen, containing anywhere from ten to twenty per cent. of nitrogenous substances. Sulphur is contained in petroleum in very small amounts but there is scarcely a crude oil mined which does not contain some sulphur. Some crude oils, such as those obtained in Ohio and Indiana, contain large amounts of sulphur compounds.

It has been mentioned that petroleums vary considerably in accordance with their origin. Thus in the United States a petroleum that comes from Pennsylvania will be found to contain nearly all lubricating oils. On the other hand, petroleums are found elsewhere that consist of large percentages of readily volatile ingredients and thus yield comparatively large amounts of gasoline on distillation. There are still other petroleums that are of very poor quality indeed, and that yield very little gasoline and lubricating oils. They are composed principally of very high boiling and viscous hydrogens. Such crude oils have been found to be of but little use except for firing purposes unless they are rendered suitable by some special process of cracking for the production of cracked gasoline.

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(Continued from page 528)

tageous improvements are structurally possible when gas fuel is burned and they have designed boilers embodying these features. If they thought that their coal-burning types were satisfactory for gas fuel, they would not have gone to the trouble and the expense of developing a special gas-fired boiler.

There are many reasons why coal boilers equipped with gas burners will not give efficient, satisfactory results. These embody such subjects as relative grate area, relation of various heating surfaces to the flame, impingement of the products of combustion on these surfaces, draft conditions, etc., but inductive reasoning invites argument and difference of opinion. And, as actual results are the real interest rather than a technical discussion, explaining the cause of these results, it is sufficient to state the results of experience without explanation or qualification.

A Survey of the Field

The Southern California Gas Company has made a survey of the various buildings in Los Angeles using gas fuel. The findings of this survey may be illustrated by two characteristic examples, the Union Bank building and the California Bank building. Both buildings are Class A, limit height structures, having banking rooms on the ground floors and offices on the upper floors. Both buildings were designed by the same firm of architects. The Union Bank building has an equivalent of 10,500 square feet of direct radiation and a unit gas cost of $0.074 per square foot per heating season. The California Bank building has an equivalent of 17,538 square feet of direct radiation and a unit gas cost of $0.117 per square foot per heating season. In other words, the building having a boiler plant designed to burn coal, but equipped with gas burners, required 58.1 per cent more fuel per unit of connected load than those having a boiler plant designed to burn gas. This survey showed that the plants designed to burn gas were consistent in efficiency and fuel consumption while the converted plants consumed from 20 per cent to 130 per cent more fuel per unit of connected load than the gas-fired boiler plants.

It has been our experience that by having our combustion engineer operate these plants, we can reduce the gas consumption 50 per cent in plants where the worst conditions prevail. But he is never able to get results within 20 per cent of those obtained in boiler plants designed to burn gas that are without expert supervision. Then, too, as soon as our engineer stops giving service on converted plants, the fuel consumption consistently rises to its previous high level.

Experience with Converted Coal Furnaces

In New York City, the gas company expresses the following opinion:

"Several attempts have been made by both the gas company and local heating contractors to convert coal-fired boilers to gas, but the result has always been questionable and in most cases absolutely unsatisfactory. The troubles encountered were as follows:

"a. In most cases the efficiency was so low that the operating cost was prohibitive.

"b. There was great difficulty in finding suitable burners for each type of fire-box.

"c. In many cases it was impossible to burn the required amount of gas properly within the fire-box space.

"All the experiences quoted above are quite emphatic in their convictions that converting coal-fired house-heating boilers to gas is not good business and will never lead to the establishment of gas as a suitable fuel for house heating."

So let our motto be: "We can heat the Pacific Coast more cheaply and conveniently with gas fuel than any other fuel if we insist upon the installation of appliances designed to burn gas."

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

AMMONIA FROM COKE OVEN GAS

THE hot coke oven gases are made to come in contact with a counter-current stream of lime- and tar-containing ammonia waters which are recovered from earlier stages in the process. These ammonia waters are sprayed down in a cold state from the top of a distilling tower, and their ammonia content is entirely removed by the coke oven gas. The gas, which has thus had its ammonia content increased, can then be made to flow through a number of condensers connected in series, the direction of the flow being from top to bottom and in these condensers all the tar, the principal proportion of water, and a part of its ammonia are removed. The condensate—the tar-containing ammonia liquor—is mixed with limestone and is used for irrigating the distilling tower which has been mentioned above. This process is patented in French Patent No. 593,565.

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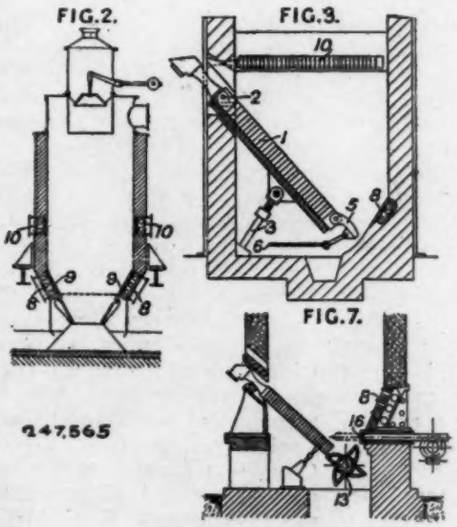
GAS PRODUCER

GAS-PRODUCERS are fitted with steam injectors in order to prevent sinkering. The injectors 8, Fig. 2, in the form of perforated tubes are arranged immediately above the grate, and may be protected by perforated tiles 9; a second series of injectors 10 may be arranged within the combustion zone. In a modification, the injectors are arranged as shown at 8 and 10 in Fig. 3. A grate or fuel support, 1, is suspended by trunnions, 2, at its upper end and supported by screw-jacks, 3, at its lower end. The ash may be discharged by a hinged shutter, 5, operated by a rod, 6; or a rotary ash-discharger, 13, Fig. 7, with hollow perforated vanes may be arranged below fire-bars, 16, having an alternating movement. Atomized water, with or without air, may be used instead of steam. British Patent No. 247,565.



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ORIGIN OF CARBON DISULFIDE IN THE CARBONIZATION OF COAL

THE part played by carbon disulfide in determining the use of high sulfur coals for gas making purposes has been indicated, and a laboratory study of carbonizing conditions which produce this compound made. It is shown that carbon disulfide apparently obtained by interaction between the constituents of the gas and the coke was really derived from the reheated coke alone, and no evidence in support of the widely accepted secondary interaction theory was obtained. Coal was carbonized without producing detectable quantities of carbon disulfide when it was heated slowly and allowed to gasify freely. When it was heated so rapidly that a dense coherent coke resulted from a high volatile coal, carbon disulfide was found in the products of gasification though the quantity of the coal carbonized was small and the tarry and gaseous products had only a small amount of space and time contact with carbon. A possible explanation for this formation is advanced, and the experimental findings are shown to be in accord with large scale tests and technical practice. It is suggested that the rate of change of temperature be included as an important variable in further related studies. (Paper delivered at the meeting of the American Chemical Society.)

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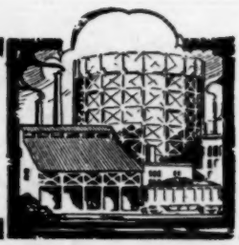
TEMPERATURES, PRESSURES AND DENSITIES OF GASES

IN a publication issued by the Bureau of Standards, No. 279, there is given a very comprehensive study of the relations existing between the temperatures, pressures and densities of gases. The purpose of this study is to derive a formula in a simple manner with the minimum requirements and theoretical knowledge on the part of the reader. Experimental data involving high pressures are presented in this treatise in such a form that problems of this nature can easily be solved by introducing facts taken from curves. The publication also contains a rather extensive bibliography of the literature pertaining to these subjects.

NEWS OF THE GAS INDUSTRY



Natural Gas Men Hold Interesting Meeting

Conservation of Resources Stressed

The annual convention of the Natural Gas Association of America, which was held in Tulsa, Oklahoma, from May 17th to 20th, inclusive, was a very interesting and important gathering and one that attracted natural gas men from all over the country. Not only was the business part of the program very carefully prepared and arranged so as to include all the important problems that are agitating the minds of the natural gas men, but the entertainment features were particularly attractive.

Thus, for example, a very entertaining feature was presented at the banquet on May 19th, when six Oklahoma Indians garbed in tribal regalia were presented to the gathering, and did songs and dances and talks both verbally and in the Indian sign language. The audience then was told that all these Indians, while either full or half blood representatives of their respective tribes, were junior or senior students in the colleges of business, law or fine arts at the University of Oklahoma, one, the grandson of a tribal chief, being an inter-collegiate oratorical champion. It was known that many of the visitors had hoped and expected to see Indians in Oklahoma, and this feature of the program was arranged in order that they might not only see Indians but also see the progress made by many of Oklahoma's native sons and daughters.

There were also wrestling bouts on Monday night, Carnival Ball on Tuesday night, a pageant on Wednesday morning, and as the program announced, "Just a little music, once in a while, for diversion," during the business sessions.

The principal point developed at the business meetings was in connection with conservation of natural gas that is discovered during oil well drilling. A plea was made by Robert W. Hendee of Okmulgee, who told the gas men that one of the most horrible examples of gas waste was in the Cushing pool, where 100,000,000 cubic feet was allowed to go to waste every day, according to best estimates he could get.

Hendee assured the gas men that practically all of the large oil companies in the Mid-Continent field were adopting devices for the conservation of natural gas found in drilling oil wells. In pleading for saving gas Hendee said that in the Cushing pool case the "sole idea of the operators was to produce an oil well and they let the gas blow open for days at a time in order to enable them to continue drilling for oil."

Contrasts Conditions

Hendee contrasted this condition with that in the Cromwell field, saying:

"A good example of care being taken to produce the oil and gas without waste was in the enormous Cromwell field, where the rotary was used to or near the top of the sand and then the well was drilled in with standard tools. Each well ready to drill in was equipped with a control casinghead, which may be closed even with the tools in the hole. Connected with the control casinghead was a flow line, separator and flow tanks. All of the oil was saved thereby, but for many days before the advent of gasoline plants, the gas was conducted away and either blown in the air or burned. With the arrival of the gasoline plants this gas is now stripped of its gasoline content and in turn either returned to the lease for operating purposes or compressed by special compressors and delivered into the lines of one of the gas transmission systems."

A number of important questions were discussed at the Wednesday morning meeting and those of particular importance were "Effective Methods for Protecting Trunk Lines From Corrosion," and the question whether or not it was necessary to protect service lines from corrosion under various conditions. Other important matters discussed were the methods used in removing water from producing gas wells, methods of providing for slack in a large welded line to care for expansion and contraction, the use of orifice or displacement meters for commercial and industrial consumers, mixing stench with natural gas to aid in the detection of leaks, range of accuracy of recording gravitometers, methods for sweetening natural gasoline, for making vapor tension tests of natural gasoline, for the removal of dirt, sand, etc., from pipe lines and the uses of screens ahead of regulators.

Among the interesting papers presented were "Natural Gas—Its Conservation and Significance to the Gas and Oil Operator," by E. O. Bennett, of Bartlesville, Okla.; "Complaints Are Merely Contact Points to Promote Good Will," by John T. Naylon, El Reno, Okla.; "Methods of Selling Gas in Competition With Other Fuels," by E. J. Stephany, Pittsburgh, Pa.; "Field Development and Operating Economies," by Robert W. Hendee, Okmulgee, Okla.; "Care and Operation of Gas Wells," by H. R. Pierce, Tulsa, Okla.; "What the Laboratory Means to the Natural Gas Industry," by R. M. Conner, Appliance Testing Laboratory of the American Gas Association, Cleveland, Ohio.

Officers Elected

R. W. Gallagher, of Cleveland, Ohio, general manager of the East Ohio Gas Company, was elected president of the Natural Gas Association of America. Cincinnati, Ohio, was chosen as the meeting place for the 1927 convention of the association. N. C. McGowen,

of Shreveport, La., general manager of the Louisville Gas Company, Inc., was elected vice-president; S. W. Meals, H. C. Cooper and T. B. Gregory of Pittsburgh, and F. L. Chase of Dallas were re-elected, and James H. Dye of Charleston, W. Va., and Raymond Cross of Oil City, Pa., were elected to the board of directors.

The convention this year was regarded as among the best in the history of the association. Approximately 1,000 members of the natural gas industry from outside the State of Oklahoma were present and the sessions were full of interest and profit.

New Properties Purchased for Oklahoma G. & E. System

Chicago, Ill.—Properties of the United Power Company and Chandler Electric Company, serving fourteen communities in Oklahoma having combined population of approximately 9,000, have been purchased by the H. M. Byllesby & Co. interests from Robert K. Johnson of Oklahoma City and will be operated as part of the Oklahoma Gas and Electric Company system.

With the addition of these properties, Oklahoma Gas and Electric Company will serve a total of 121 cities and towns.

G. M. Kirchmer Addresses Club

Gas Man Talks on the Soul of a Corporation

Brooklyn, N. Y.—"The Soul of a Corporation" was the subject of a talk by George M. Kirchmer, general claim agent of the Brooklyn Union Gas Company, before the members of the Elm Club of Emanuel Lutheran Church, recently.

"Every corporation," said Mr. Kirchmer, "has a composite soul. It is the essence of the soul of the officers of the company, the managers and the personnel. During the last decade corporations throughout the United States have shown keen interest in the moral, financial and spiritual welfare of the persons employed by them."

Mr. Kirchmer pointed out that a man who is head of a corporation could not be a careless individual; careless of morals and careless of clean thoughts during the week, while he is at work, and be a gentleman on the Sabbath.

"Most of the heads of big corporations," continued Mr. Kirchmer, "are ardent churchmen, respectable and generous citizens." He spoke of the donations of various corporate heads to science, religion and the advancement of mankind generally throughout the world.

The Brooklyn Company

"It is expected," said Mr. Kirchmer, "that I say something about the soul of the Brooklyn Union Gas Company. Of course, I am employed by that corporation and what it does for the interests of its employees is only what other large corporations do throughout the entire country."

"In thirty-seven of the States there has been inaugurated workmen's compensation laws and welfare laws governing the comforts of the employees. While a good number of these laws were suggested by labor organizations, the corporations were not far behind in backing up every good law that labor organizations suggested for the welfare of the employees.

"Most of the laws and amendments were suggested by corporate agents and corporation heads throughout the United States."

Mr. Kirchmer told about the pension system in vogue in the Brooklyn Union Gas Company system, its maintenance of a medical office for the care and treatment of sick men, the life insurance feature for the employees and also full payment of wages for all injuries sustained by the employees.

He spoke about the recent bond issue of the company, in which several hundred of the employees subscribed for bonds of the company and that in thirty months they become part owners of the business.

Employees Stockholders

The speaker mentioned that several hundred employees were already stockholders and the generous policy of the company in issuing stock to its employees. This was not peculiar with the Brooklyn Union Gas Company but was also followed by other large corporations in the United States. He mentioned the fact that the telephone company, electric light companies, railroads and great steel companies are making employees partners in their enterprise.

Mr. Kirchmer spoke of the benefits of the workmen's compensation law, which does away with litigation.

"The theory," continued he, "worked out in the workmen's compensation law of the various States, was that men who worked for industries, weaved into industries all of their personality, their mind and their physique, and after years of toil, if they met with an accident or became ill because of an accident, they should be permitted to capitalize on what they have woven into the structure of the corporation.

This theory, said the speaker, was one which the labor men had endorsed and was endorsed by many corporation heads throughout the United States.

The schedule of awards for loss of various members of the body was mentioned.

At the conclusion of Mr. Kirchmer's talk, Dr. I. B. Smith, of the Medical Department of the Brooklyn Union Gas Company, gave an illustration of the Schaefer Prone Pressure Method of Resuscitation, for reviving persons suffering from any kind of shock or asphyxiation from any cause.

Mr. Smith stated that during the last year he had instructed over 4,000 men in this art and that a dozen lives had been saved during the last year by the employees of the Brooklyn Union Gas Company. A demonstration of the method was given by Joseph McEntee, who recently saved the life of a citizen, having been instructed in the art by Dr. Smith.

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Southern Counties Company to Erect Office Building

Long Beach, Cal.—The Southern Counties Gas Company will erect a $25,000 office building.

Work on the new office building is expected to be started in the near future.

A. G. A. Awards Prizes in Architectural Contest

Winners in the $2,500 prize competition of the American Gas Association for plans for a six-room completely gas equipped suburban house have been announced. By an odd coincidence the first three cash prizes were awarded to Cleveland, Ohio, architects.

The winners are as follows: First prize, $1,000, Russell S. Simpson, 3293 Silsby Road, Cleveland Heights, Ohio; second prize, $500, F. S. Hopkins and P. C. Bohanon, 9314 Miles Avenue, Cleveland, Ohio; third prize, $250, Antonio di Nardo, 1836 Euclid Avenue, Cleveland, Ohio; fourth prize, $250, Harold A. Rich, 23 Newell Road, Auburndale, Mass.; fifth to ninth prize, inclusive, $100 each, Alfred Cookman Cass, 101 Park Avenue, New York City; George C. Crockett, 67 Willow Avenue, Pelham, N. Y.; Walter J. Thies, Carl H. Martin and Erskine A. Hart, 1406 Third National Bank Bldg., Dayton, Ohio; Otho McCrackin, Hutchinson, Kan.; Charles W. Cleary and James N. Holden, 177 State Street, Boston, Mass.

Honorable mention was awarded the following: Carl C. Tallman, Seward Bldg., Auburn, N. Y.; Russell E. Yates, 1000 Marquette Bldg., Detroit, Mich.; R. Schofield Morris, 264 McNab Street South, Hamilton, Ontario, Can.; Ernest Irving Freese, 6247 Pine Crest Drive, Los Angeles, Cal., and Frank C. Burke, 76 Spruce Street, Watertown, N. Y.

The competition was open to all architects, draughtsmen and students in architectural schools in the United States and Canada. One of the objects is to bring to the attention of prospective house builders in the suburbs and residential districts and to architects and draughtsmen the many ways in which manufactured and natural gas may be advantageously and economically employed in the small house.

Judges of the competition were Aymar Embury, II, and Dwight James Baum of the American Institute of Architects, and Alexander Forward, secretary manager of the American Gas Association. The architectural adviser for the competition was William Adams Delano, of New York.

The interest shown in this contest throughout the United States and Canada was almost unprecedented and it became the duty of the judges to examine and pass upon no less than 363 plans. The judges were unanimously of the opinion that a decision was about the most difficult task of their lives. For the most part the plans showed genuine merit and originality of thought. The offerings were examined and re-examined and thoroughly discussed at extended sessions.

In accordance with the terms of the competition, the jury laid as much emphasis on the convenience and livable quality of the houses as upon their exterior appearance, and it may be said that original ideas as against standardized appearance especially attracted the attention of those in charge of the judging.

No contestant knew who were the judges prior to the closing of the contest. All drawings were carefully marked with a number and a corresponding number was recorded upon the sealed envelope containing the name and address of the contestant.

When final decision had been made as to all the prize winners and those deemed deserving of honorable mention the envelopes were opened in order, and it was surprising, indeed, to find that the winner of the second prize, like the first, was located in Cleveland, and the astonishment of the judges may be imagined when it developed that the winner of the third prize hails from the same city. This result was a pure and remarkable coincidence.

The American Gas Association feels a pardonable pride in the high quality of this contest. The two architectural judges who received the highest number of votes from the contestants themselves are among the foremost architects in America, men of the highest personal and professional standard. The architectural adviser occupies a similar position in the profession. Further, it is most evident from the character of the plans submitted that the contestants were mainly men of skill, experience and originality.

The drawings submitted by contestants who did not receive prizes or honorable mention will be returned as quickly as possible.

Pays One Gas Bill and Asks for Another

Frank L. Dame, president of the North American Company, described recently what he considered the first case on record of a customer's paying a gas bill and immediately asking for a second one. The case was reported by the management of a North American subsidiary.

"The bill I have just paid is rather large, and I would like a smaller one to take home to my wife," explained the customer. "The reason the bill I paid is so large is because while my wife was away last week I cooked a breakfast for myself. Then I went away for a business trip that lasted four days and when I returned I found the gas still burning. Now I must have a small bill to show her."

E. T. Gladin Promoted by Gas Light Company

Augusta, Ga.—E. T. Gladin, who has been appliance salesman of the Gas Light Company, of Augusta, for the past year, has been transferred to Valdosta, Ga., as manager of new business department of the Valdosta Gas Light Company, according to an announcement recently made by W. F. Eve, Jr., division commercial manager of the associated companies.

The promotion of Mr. Gladin is a distinct compliment to him and his many friends here will be glad to learn of his progress. The division, which is headed by Mr. Eve as commercial manager, includes Augusta, Valdosta, Gadsden, Ala., and Gastonia, N. C.

Brooklyn Union Industrial Engineers Dine Engineering Graduates

Brooklyn, N. Y.—The graduating class of the Mechanical Engineering Department of the Polytechnic Institute were the guests at a dinner at the Chamber of Commerce, given by the Industrial Engineers of the Brooklyn Union Gas Company. The instructors of the class were also present at the dinner. Robert H. Staniford, assistant manager of the New Business Department, presided.

After the dinner the graduates were taken to the auditorium of the Brooklyn Union Gas Company building at 176 Remsen Street and were entertained with pictures of gas installations in and about Brooklyn. On the screen were shown coffee roasting, candy making, cocoa roasting, ham smoking and a traveling oven that bakes five thousand loaves of bread an hour.

Various installations showing the adaptability of boilers, the various types of house heating, ranging from the ordinary two-story house to a large single family house were exhibited.

What interested the graduates most was the typical installation for the treatment of non-ferrous metals, lead melting, zinc and aluminum alloy and die-casting machines, all fired by gas fuel. One of the pictures showed the work in the ship-yards in which gas is used for the treatment of steel and the hardening of metals, also the application of gas to the paint and varnish industry.

Mr. Staniford welcomed the graduates to the Brooklyn Union Gas Company. He told them they were welcome to call upon the company's various engineers at any time in handling any problems that might arise in the practice of their profession. He also stated that the permanent exhibition of gas-fired appliances which was held at 180 Remsen Street was at their disposal for any demonstrations that they may care to make and wished them to make use of this institution. He also stated that other colleges, high-schools and preparatory schools in Brooklyn would be welcome at the company's exhibit at any time that they care to avail themselves of it.

After the exhibition of pictures he took them to the permanent exhibit which the company maintains at 180 Remsen Street and gave them demonstrations in the uses of various gas appliances and practical illustrations of the use of gas as fuel.

Guests at the Dinner

Members of the New Business Department attending the dinner were: Messrs. R. H. Staniford, Theodore Merkt, E. J. Devlin, Alva Palmer, J. W. Piatt, Joseph Quinn, C. C. Aspinwall, C. W. Waddington, R. B. Underhill, E. A. Koster, J. Jares, W. G. Van Benthuysen, J. Forrest and Gebhardt Beck.

Mr. Kenkichi Nagai, Chemical Engineer of the Toho Gas Company of Nagoya, Japan, was also present.

Students of the graduating class of the Polytechnic Institute attending the dinner were: Messrs. Louis Barfuss, S. S. Barnard, Edward J. Benesch, A. W. Bollenback, C. Chandesh, Joseph P. Condello, E. A. Faller, J. E. Fitz-Simons, G. S. Gavrilovitch, A. Giardina, Louis Grossman, Stanley J. Harazim, Morton Hatton, John Hildemann, J. Huber, A. Kerekes, Herman Kuch, Henry W. Lang, George R. Logan, Jr., George Lutz, James A. Manalio, Charles L. O'Connor, Jr., William Riegger, Herbert G. Schaul, Christian Steffan, H. Tarakajian, J. S. Ungar, Edwin Zipse, Charles Wikstrom and Cyrus Lo Pinto.

Faculty members attending the dinner were: Dean Streubel, Professors Church, Immediato, Carvin, Henry, and Messrs. Setchell, Ming, Weyer and Bray.

* * *

Syracuse Gas Expansion Authorized

Albany, N. Y.—The Public Service Commission has authorized the Syracuse Lighting Company, Inc., to extend its gas distributing system to serve the towns of Onondaga and Geddes, Onondaga county, and exercise franchises in these two towns. There is some service in the town of Onondaga now under a limited franchise but the new franchise authorizes operation in the entire town. In the town of Geddes the company plans at present to extend its mains 300 feet along Montrose avenue, making further extensions as demand increases. The company was also authorized to exercise the rights and privileges under a new electric franchise granted by the village of Fabius.

* * *

A. W. Claussen Joins McWane Cast Iron Pipe Company

Birmingham, Ala.—A. W. Claussen, formerly assistant engineer, National Underwriters Laboratories, Chicago, has joined the organization of the McWane Cast Iron Pipe Company, Birmingham, Alabama, manufacturers of the McWane Precalked Joint Cast Iron Pipe and Fittings, as research engineer, with headquarters in Birmingham.

* * *

Municipal Gas Company Changes Capitalization

Albany, N. Y.—Municipal Gas Company of the City of Albany, through Neile F. Towner, attorney, has filed a certificate in the office of the secretary of state increasing its number of shares of capital and changing the par value thereof from 100,000 shares $100 par value to 1,000,000 shares no par value.

* * *

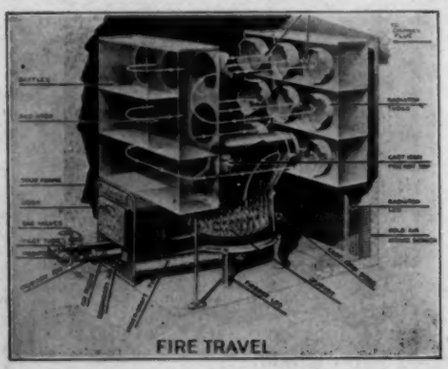
A Gas Man Saves a Life

Los Angeles, Cal.—C. F. Smith, field engineer of the Valuation Department of the Southern California Gas Company, recently saved the life of W. L. Long, a sailor from the U. S. S. "Virginia." Long, himself a powerful swimmer, was caught in a rip tide while bathing in the ocean opposite the foot of Wilshire Boulevard. The tide carried him far beyond the end of the pier, more than half a mile from shore. After a fight with the half drowned man in the surf, Smith was able to bring him to shore. It was necessary to use artificial respiration to revive him. Smith himself, due to his severe exertion, fainted.

Smith, who is a resident of Santa Monica, is known among his friends for his repeated acts of heroism. He has previously saved the lives of two women and three men. This is the sixth rescue to his credit.

The Roper-Babcock Furnace

Rockford, Ill.—The gas industry was interested to learn a few weeks ago that the George D. Roper Corporation of Rockford, Illinois, had purchased outright all the rights, property and interests of the Babcock High Efficiency Warm Air Gas Furnace.



The Furnace Cut Away to Show Travel of Fire

The Roper furnace was originally developed through the combined scientific efforts of the officials and engineers of twenty leading gas companies in the East and Middle West. The furnace is now being used in thousands of homes, from California to Maine and from Canada to the Gulf. It has been tested time after time—it is a proven success.

The Furnace Cut Away to Show Travel of Air

The Pacific Coast plant, formerly operated by the Babcock Company, will be moved to Rockford and production started immediately. A large outlay of capital is involved in the purchase, and the Roper Corporation will considerably increase the plant capacity and number of men employed. Right now arrangements are being made to put back of this business all of the resources and facilities of the Roper organization. The Roper Company plans to use all effort in promoting the sale of this appliance.

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Contracts Awarded

St. Louis, Mo.—The following contracts have been placed with the Parker Russell Mining and Mfg. Company since the first of the year and work is now proceeding. These contracts specify Parker Russell silica for retorts and settings.

Two new arches and benches of inclined 6's and refilling of four benches of inclined 6's at Benton Harbor, Mich.

Refilling from foundation, eight benches of 8's and installing the Congdon Scrubber Standpipe System complete on the benches at Laclede Gas Light Company, Station "B," St. Louis, Mo.

Refilling six benches of 9's and the installation of the Congdon Scrubber Standpipe System complete at Nashville, Tenn.

Refilling seven benches of 6's, including the Congdon Scrubber Standpipe System complete on all benches, at the various properties of the North Carolina Public Service Company.

One new arch and bench of 6's at Owen Sound, Ont.

One new arch and bench of 6's at Charlotte, Mich.

Refilling three arches and benches at London, Ont.

The Byllesby Engineering and Management Corporation has placed a contract with the Western Gas Construction Company for the furnishing and erecting of a high pressure tank at Monterey, Cal. This tank will be similar to the one now being installed at LaJolla, Cal.

The Consolidated Gas Company of Glasgow, Ky., has placed a contract with the Western Gas Construction Company for furnishing two steel purifiers similar to the two which they furnished this company two years ago. These purifiers are used in connection with their natural gas.

One of the most unusual contracts recently taken by the U. G. I. Contracting Company, Philadelphia, is that for two sets of carburetted water gas apparatus to be operated by U. G. I. automatic controls, for the Osaka Gas Company, Osaka, Japan. With their usual clear discernment and good judgment, the Japanese engineers made a careful study of the carburetted water gas apparatus that would best suit conditions in their country and decided upon U. G. I. sets.

The General Engineering and Management Corporation, of New York City, which operates the plant of the Wildwood, N. J., Gas Company, is having the Chrisman Cycle installed on the carburetted water gas apparatus at the Wildwood plant. Contract to do this work has been awarded to the U. G. I. Contracting Company, Philadelphia. This is in the nature of a repeat order, because the General Engineering and Management Corporation made its first trial of the Chrisman Cycle at the Kennett, Pa., gas plant, and there proved its value for increasing the efficiency and bettering the results of water gas apparatus.

The Gas Machinery Company of Cleveland, Ohio, has been awarded a contract by the New York and Richmond Gas Company of Staten Island, N. Y., for washer cooler equipment to be installed in the gas plant at Stapleton, Staten Island, N. Y.

This equipment will be used in connection with the new eleven-foot water gas set installed by the Gas Machinery Company on Staten Island recently, and take care of the increased production required at the works.

The Madison Gas and Electric Company of Madison, Wis., has awarded a contract to the Gas Machinery Company of Cleveland, Ohio, to furnish exhaust steam equipment for the ten-foot and eleven-foot Gas Machinery Company sets in the plant at Madison, Wis.

The work includes exhaust steam accumulator, regulating valves, piping, regular and hydraulically controlled valves and equipment complete.